FIG. 1

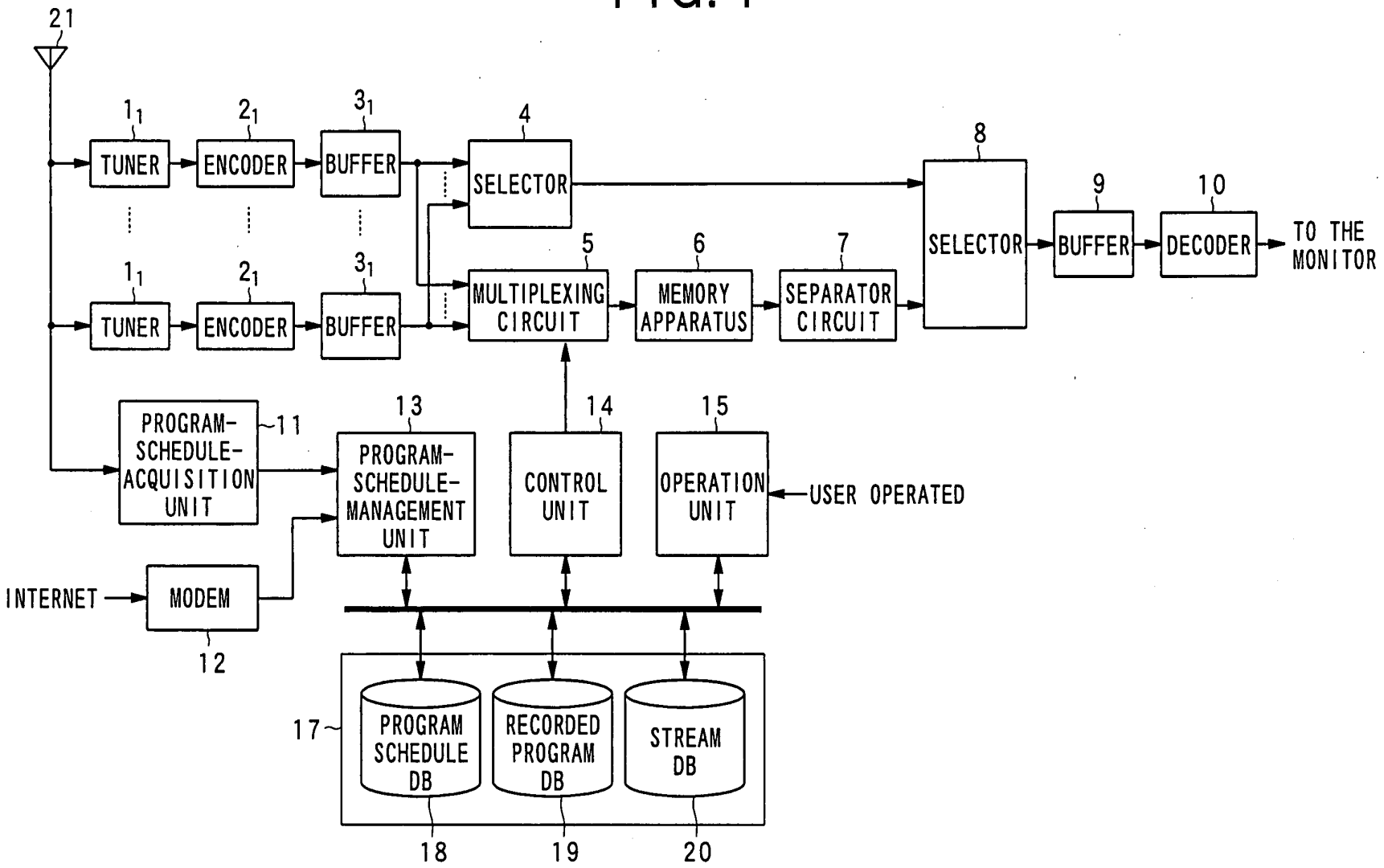
21
1_1
2_1
3_1
TUNER
ENCODER
BUFFER
4
SELECTOR
8
9
10
SELECTOR
BUFFER
DECODER
TO THE MONITOR
5
6
7
MULTIPLEXING CIRCUIT
MEMORY APPARATUS
SEPARATOR CIRCUIT
PROGRAM-SCHEDULE-ACQUISITION UNIT
11
13
14
15
PROGRAM-SCHEDULE-MANAGEMENT UNIT
CONTROL UNIT
OPERATION UNIT
USER OPERATED
INTERNET
MODEM
12
17
PROGRAM SCHEDULE DB
RECORDED PROGRAM DB
STREAM DB
18
19
20

FIG. 2

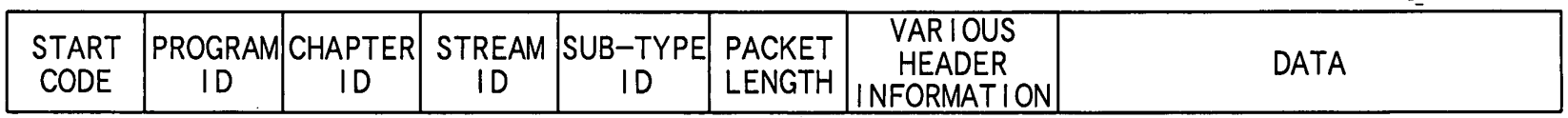
START CODE
PROGRAM ID
CHAPTER ID
STREAM ID
SUB-TYPE ID
PACKET LENGTH
VARIOUS HEADER INFORMATION
DATA

FIG. 3

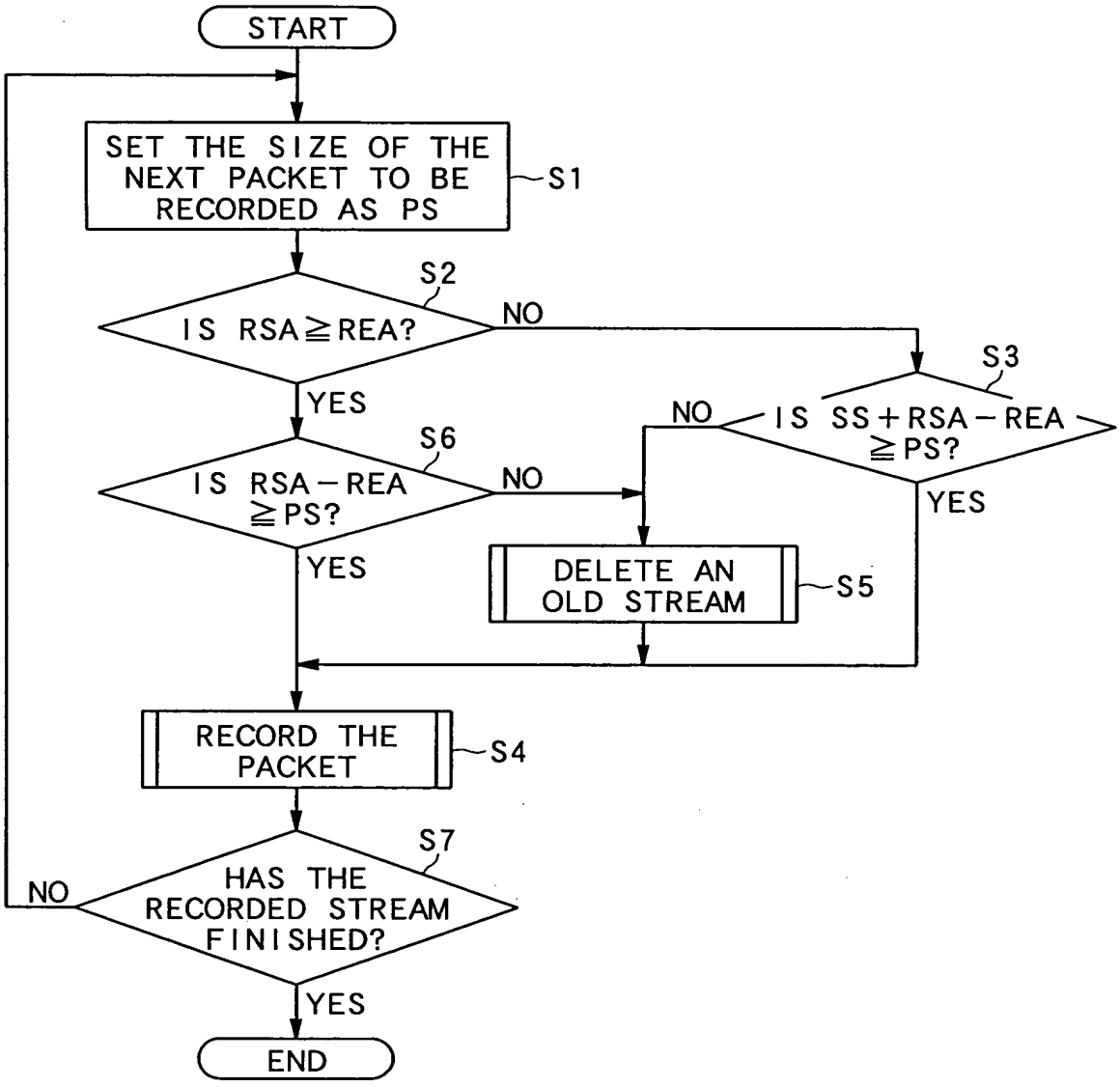
START
SET THE SIZE OF THE NEXT PACKET TO BE RECORDED AS PS
S1
S2
IS RSA≧REA?
NO
YES
S3
IS SS+RSA−REA ≧PS?
NO
YES
S6
IS RSA−REA ≧PS?
NO
YES
DELETE AN OLD STREAM
S5
RECORD THE PACKET
S4
S7
HAS THE RECORDED STREAM FINISHED?
NO
YES
END

FIG. 4

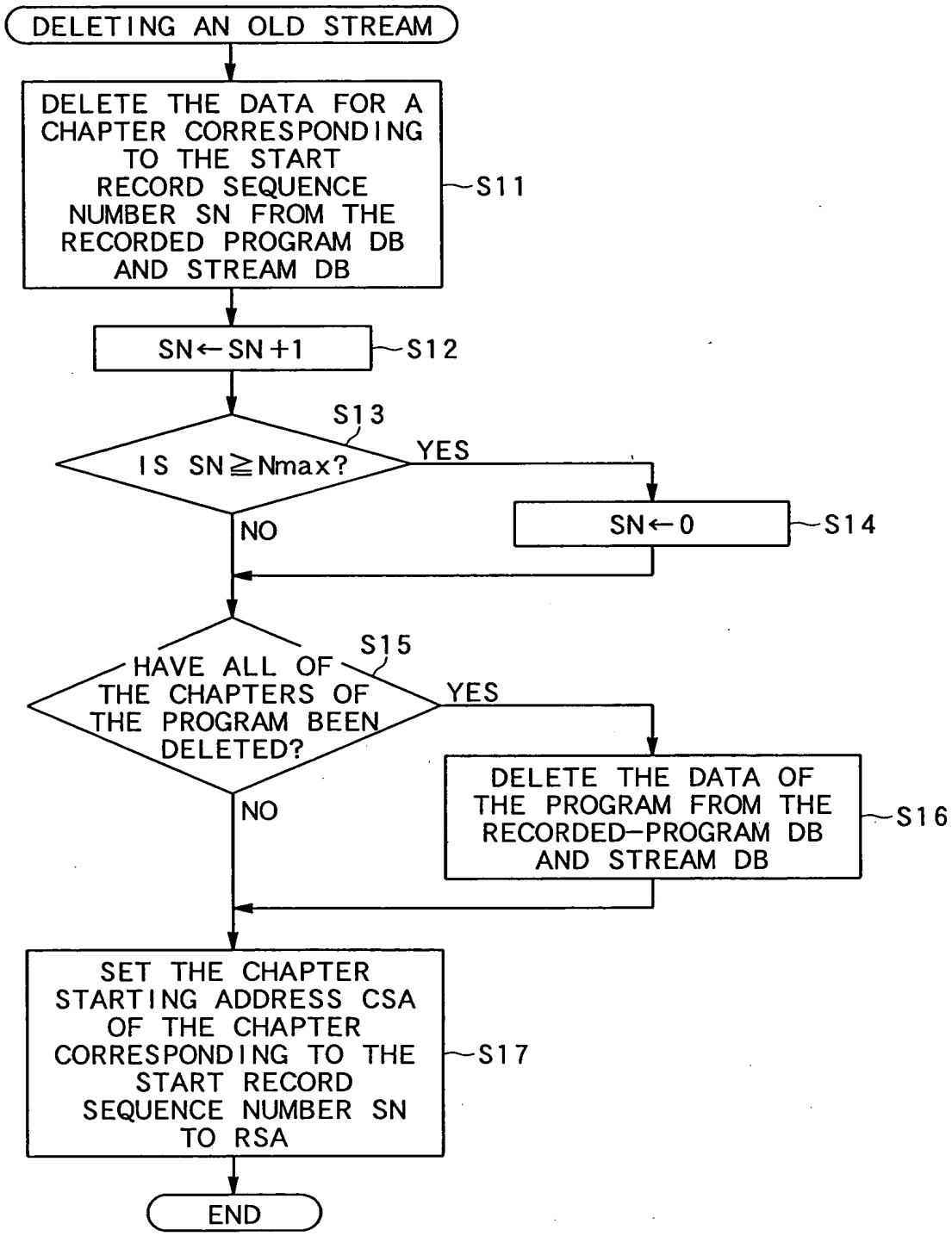
DELETING AN OLD STREAM
DELETE THE DATA FOR A CHAPTER CORRESPONDING TO THE START RECORD SEQUENCE NUMBER SN FROM THE RECORDED PROGRAM DB AND STREAM DB
S11
SN←SN+1
S12
S13
IS SN≧Nmax?
YES
NO
SN←0
S14
S15
HAVE ALL OF THE CHAPTERS OF THE PROGRAM BEEN DELETED?
YES
NO
DELETE THE DATA OF THE PROGRAM FROM THE RECORDED-PROGRAM DB AND STREAM DB
S16
SET THE CHAPTER STARTING ADDRESS CSA OF THE CHAPTER CORRESPONDING TO THE START RECORD SEQUENCE NUMBER SN TO RSA
S17
END

FIG. 5

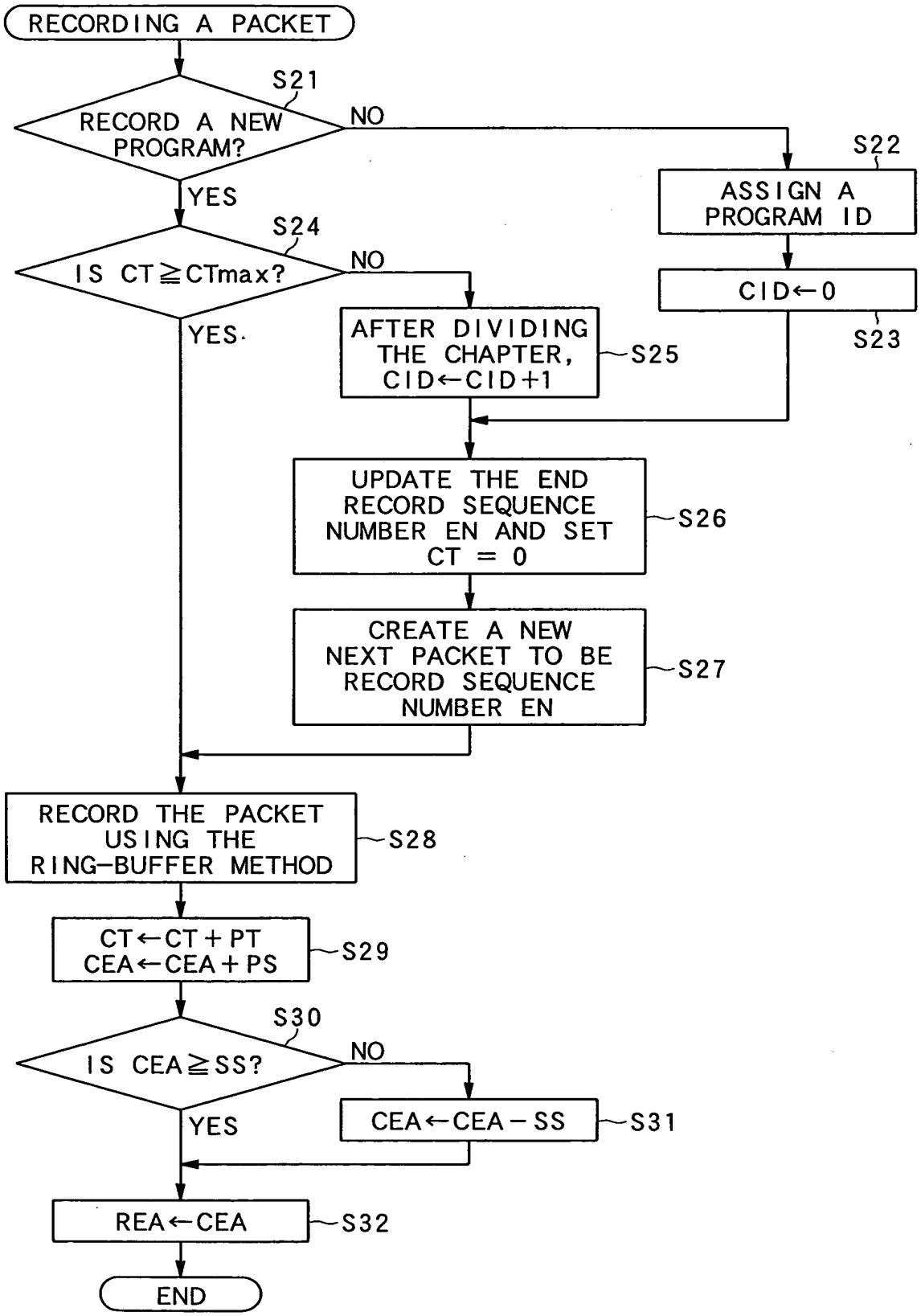
RECORDING A PACKET
S21
RECORD A NEW PROGRAM?
NO
YES
S22
ASSIGN A PROGRAM ID
CID←0
S23
S24
IS CT≧CTmax?
NO
YES
AFTER DIVIDING THE CHAPTER, CID←CID+1
S25
UPDATE THE END RECORD SEQUENCE NUMBER EN AND SET CT = 0
S26
CREATE A NEW NEXT PACKET TO BE RECORD SEQUENCE NUMBER EN
S27
RECORD THE PACKET USING THE RING-BUFFER METHOD
S28
CT←CT+PT
CEA←CEA+PS
S29
S30
IS CEA≧SS?
NO
YES
CEA←CEA-SS
S31
REA←CEA
S32
END

FIG. 6

RECORD AREA START ADDRESS			0x00-0000-0000			START RECORD SEQUENCE NUMBER	0
RECORD AREA END ADDRESS			0xFF-F000-0000			END RECORD SEQUENCE NUMBER	199
PROGRAM NAME	PROGRAM ID	PROGRAM TIME	CHAPTER ID	RECORD SEQUENCE NUMBER	CHAPTER TIME	CHAPTER START ADDRESS	CHAPTER END ADDRESS
PROGRAM A	0	00h27m30s	0	0	00h05m00s	0x00-0000-0000	0x00-1000-0000
			1	3	00h05m00s	0x00-1005-0000	0x00-2300-0000
			2	6	00h05m00s	0x00-2600-0000	0x00-3A00-0000
			...				
			5	19	00h02m30s	xxxx	xxxx
PROGRAM B	1	00h23m25s	0	1	00h05m00s	0x00-0003-0000	0x00-1800-0000
			1	4	00h05m00s	0x00-1F00-0000	0x00-2D0-0000
			...				
			4	15	00h05m00s	xxxx	xxxx
PROGRAM C	2	00h56m42s	0	2	00h05m00s	0x00-0C00-0000	0x00-1D00-0000
			1	6	00h05m00s	0x00-2000-0000	0x00-3100-0000
			...				
			11	29	00h01m42s	xxxx	xxxx
...							
PROGRAM X	25	00h04m00s	0	199	00h04m00s	xxxx	0xFF-F000-0000

FIG. 7

(DELETING PROGRAM A0, AND STARTING RECORDING OF PROGRAM Y)

RECORD AREA START ADDRESS			0x00-0003-0000			START RECORD SEQUENCE NUMBER	0
RECORD AREA END ADDRESS			0x00-0001-0000			END RECORD SEQUENCE NUMBER	200
PROGRAM NAME	PROGRAM ID	PROGRAM TIME	CHAPTER ID	RECORD SEQUENCE NUMBER	CHAPTER TIME	CHAPTER START ADDRESS	CHAPTER END ADDRESS
PROGRAM A	0	00h27m30s	1	3	00h05m00s	0x00-1005-0000	0x00-2300-0000
			2	6	00h05m00s	0x00-2600-0000	0x00-3A00-0000
			...				
			5	19	00h02m30s	xxxx	xxxx
PROGRAM B	1	00h23m25s	0	1	00h05m00s	0x00-0003-0000	0x00-1800-0000
			1	4	00h05m00s	0x00-1F00-0000	0x00-2D0-0000
			...				
			4	15	00h05m00s	xxxx	xxxx
PROGRAM C	2	00h56m42s	0	2	00h05m00s	0x00-0C00-0000	0x00-1D00-0000
			1	6	00h05m00s	0x00-2000-0000	0x00-3100-0000
			...				
			11	29	00h01m42s	xxxx	xxxx
...							
PROGRAM X	25	00h04m00s	0	199	00h04m00s	xxxx	0xFF-F000-0000
PROGRAM Y	26	00h02m51s	0	200	00h02m51s	0xFF-F000-0000	0x00-0001-0000 (RECORDING CONTINUES)

FIG. 8

(DELETING PROGRAM B0, AND RECORDING OF PROGRAM Y CONTINUES)

RECORD AREA START ADDRESS			0x00-000C-0000			START RECORD SEQUENCE NUMBER	2
RECORD AREA END ADDRESS			0x00-0006-0000			END RECORD SEQUENCE NUMBER	201
PROGRAM NAME	PROGRAM ID	PROGRAM TIME	CHAPTER ID	RECORD SEQUENCE NUMBER	CHAPTER TIME	CHAPTER START ADDRESS	CHAPTER END ADDRESS
PROGRAM A	0	00h27m30s	1	3	00h05m00s	0x00-1005-0000	0x00-2300-0000
			2	6	00h05m00s	0x00-2600-0000	0x00-3A00-0000
			...				
			5	19	00h02m30s	xxxx	xxxx
PROGRAM B	1	00h23m25s	1	4	00h05m00s	0x00-1F00-0000	0x00-2D0-0000
			...				
			4	15	00h05m00s	xxxx	xxxx
PROGRAM C	2	00h56m42s	0	2	00h05m00s	0x00-0C00-0000	0x00-1D00-0000
			1	6	00h05m00s	0x00-2000-0000	0x00-3100-0000
			...				
			11	29	00h01m42s	xxxx	xxxx
...							
PROGRAM X	25	00h04m00s	0	199	00h04m00s	xxxx	0xFF-F000-0000
PROGRAM Y	26	00h07m11s	0	200	00h05m00s	0xFF-F000-0000	0x00-0001-0000
			1	201	00h02m11s	0x00-0001-0000	0x00-0006-0000 (CHAPTER DIVISION IS PERFORMED AND RECORDING CONTINUES)

FIG. 9

(DELETING PROGRAM C0, AND RECORDING OF PROGRAM Y ENDS)

RECORD AREA START ADDRESS			0x00-1005-0000			START RECORD SEQUENCE NUMBER	3
RECORD AREA END ADDRESS			0x00-F000-0000			END RECORD SEQUENCE NUMBER	201
PROGRAM NAME	PROGRAM ID	PROGRAM TIME	CHAPTER ID	RECORD SEQUENCE NUMBER	CHAPTER TIME	CHAPTER START ADDRESS	CHAPTER END ADDRESS
PROGRAM A	0	00h27m30s	1	3	00h05m00s	0x00-1005-0000	0x00-2300-0000
			2	6	00h05m00s	0x00-2600-0000	0x00-3A00-0000
			...				
			5	19	00h02m30s	xxxx	xxxx
PROGRAM B	1	00h23m25s	1	4	00h05m00s	0x00-1F00-0000	0x00-2D0-0000
			...				
			4	15	00h05m00s	xxxx	xxxx
PROGRAM C	2	00h56m42s	1	6	00h05m00s	0x00-2000-0000	0x00-3100-0000
			...				
			11	29	00h01m42s	xxxx	xxxx
...							
PROGRAM X	25	00h04m00s	0	199	00h04m00s	xxxx	0xFF-F000-0000
PROGRAM Y	26	00h09m20s	0	200	00h05m00s	0xFF-F000-0000	0x00-0001-0000
			1	201	00h04m20s	0x00-0001-0000	0x00-F000-0000 (RECORDING ENDS)

FIG.10A

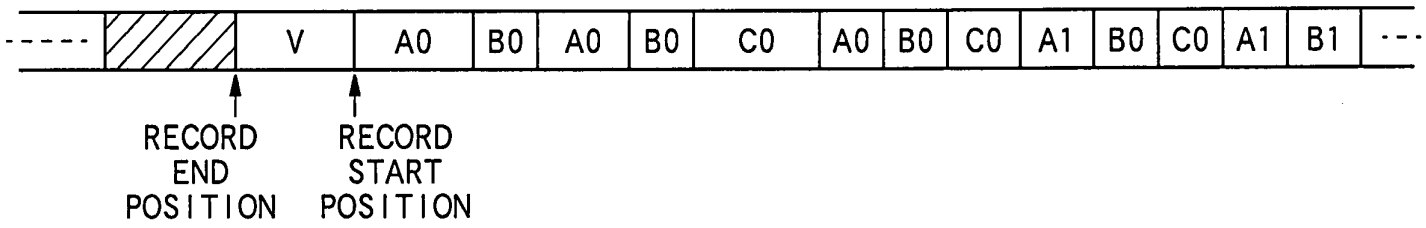

FIG.10B

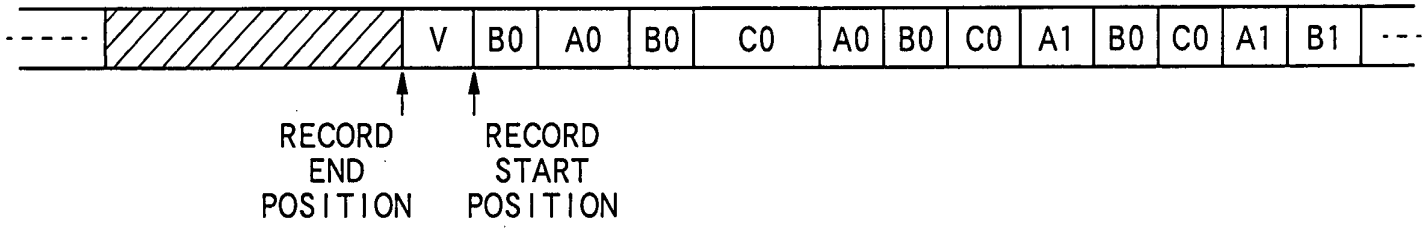

FIG.10C

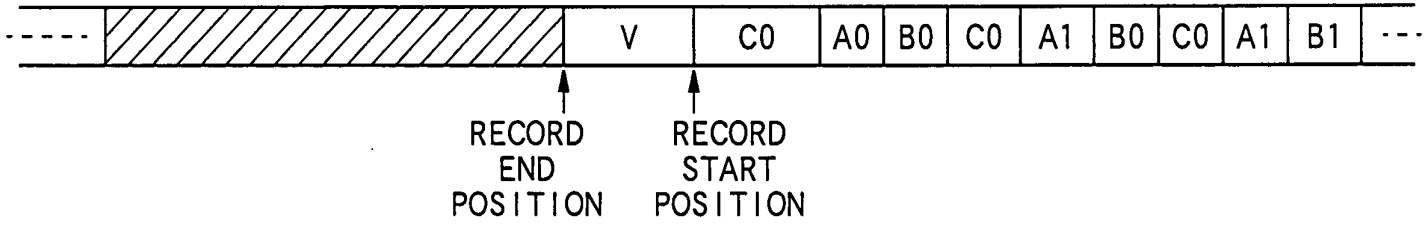

FIG.10D

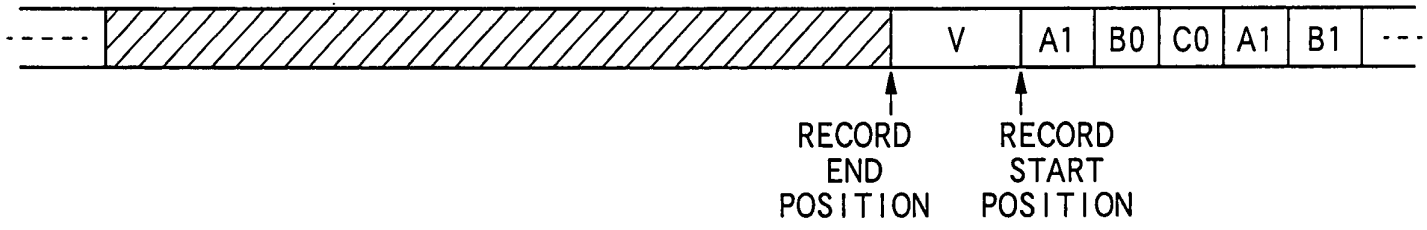

FIG.11

PROGRAM ID	STREAM ID	SUB TYPE ID	CHAPTER ID	STREAM START ADDRESS	STREAM END ADDRESS
0 (PROGRAM A)	0xE0 (VIDE01)	0x00	0	0x00-0000-0000	0x00-1000-0000
			1	0x00-1005-0000	0x00-2300-0000
			2	0x00-2600-0000	0x00-3A00-0000
			. . .		
	0xC0 (AUDI01)	0x00	0	0x00-0000-8000	0x00-0FFC-0000
			1	0x00-1005-8000	0x00-22FC-0000
			2	0x00-2600-8000	0x00-30FC-0000
			. . .		
1 (PROGRAM B)	0xE0 (VIDE01)	0x00	0	0x00-0003-0000	0x00-1800-0000
			1	xxxx	xxxx
			. . .		
	0xC0 (AUDI01)	0x10 (MAIN AUDIO)	0	xxxx	xxxx
			1	xxxx	xxxx
				. . .	
	0xC1 (AUDI02)	0x11 (SUB AUDIO)	0	xxxx	xxxx
			1	xxxx	xxxx
			. . .		
2 (PROGRAM C)	0xE0 (VIDE01)	0x00	0	0x00-0C00-0000	0x00-1D00-0000
			1	xxxx	xxxx
			. . .		
	0xC0 (AUDI01)	0x21 (JAPANESE)	0	xxxx	xxxx
			1	xxxx	xxxx
			. . .		
	0xC1 (AUDI02)	0x20 (ENGLISH)	0	xxxx	xxxx
			1	xxxx	xxxx
			. . .		
	0xBD (DATA)	0x00	0	xxxx	xxxx
			1	xxxx	xxxx
			. . .		
. . .					